

Annals of the Solar Physics Observatory, Cambridge Vol. 5, Part 1: The Spectrum of Fe II. By Dr. J. C. Dobbie. Pp. v+59+4 plates. (Cambridge: At the University Press, 1938.) 7s. 6d. net.

PART I of vol. 5 of the "Annals of the Solar Physics Observatory", Cambridge (by Dr. J. C. Dobbie, under the direction of Prof. F. J. M. Stratton), is a complete account of our present knowledge of the spectrum of ionized iron (Fe II) in the region 2150-6228 Å.

Previously to this work, the classification of the spectrum of Fe II was in the main that of Prof. H. N. Russell, who in 1926 identified some two hundred lines and sixteen terms.

The material used by Dr. Dobbie was initially that obtained by Prof. H. F. Newall and the late Bryan Cookson, and largely extended by many new plates taken by Mr. W. Moss on the 21-ft. Rowland grating of the Solar Physics Observatory, Cambridge, and some confirmatory plates in the ultra-violet taken by Prof. H. Dingle at the Imperial College of Science and Technology, London. In the photographs the lines run from pole to pole of the iron arc, and the principal method of picking out lines due to Fe II was to note the lines that were only present at the poles or that were stronger at the poles than in the central part of the arc. Dr. Dobbie has extended the number of classified lines to some 1,700 and has identified 73 terms involving 218 levels. The spectrum presents several peculiar features of interest; in many multiplets the intensities are anomalous and attention is directed especially to the line at 2272·719 Å. ($a^4D_{3/2} - z^4D_{3/2}$) which has an intensity of 1 only, on the scale used, instead of 9 as was to be expected.

Several years patient and skilful labour have gone to the production of this achievement. For progress in astrophysical research, and in certain branches of physics proper, there is great need of the classification of more spectra, and of more detailed or extensive classification of many already partially classified. Few in Great Britain devote much attention to this type of work; the results are perhaps not very spectacular and in addition to the great consumption of time, considerable skill has to be acquired before the solution of this kind of physical 'crossword puzzle' can be profitably attempted. It is probably only in institutions with a permanent research staff that such work is likely to be done, and we welcome warmly this successful extension of the work of the Solar Physics Observatory.

J. A. C.

British Rainfall 1937:

the Seventy-seventh Annual Volume of the British Rainfall Organization. Report on the Distribution of Rain in Space and Time over the British Isles during the Year 1937 as recorded by over 5,500 Observers in Great Britain and Ireland. (Air Ministry: Meteorological Office. M.O. 427.) Pp. xx+293. (London: H.M. Stationery Office, 1938.) 15s. net.

THE rainfall of 1937 over the British Isles as a whole was 104 per cent of the average, being 110 in England and Wales, 91 in Scotland and 103 in

Ireland. This distribution was remarkably similar to that of 1936. The main features of the map showing the distribution of the rainfall as a percentage of the average are the large area in the north-west of Scotland with less than 80 per cent, and the areas in the south-east of England with more than 130 per cent—with more than 150 per cent at Southend, Clacton and Boston. There was a great excess of rain up to the end of May, greater than in any similar period since 1870, but owing to subsequent dry months the total excess for the year, as indicated above, was small.

March and December were outstanding as snowy months. Among heavy thunderstorm downpours of the year, those of August 13 in the London district and of July 15 over a belt of country stretching from Somerset to Lincolnshire may be cited. Approximately 6 inches of rain fell at Boston for the third time since 1930, the other occasions being on July 11, 1932, and August 8, 1931—a remarkable cluster seeing that the previous greatest fall in a day in that town half a century or so ago was only 3 inches.

This year's special articles comprise one by Miss L. F. Lewis on wind velocity measurements at the level of the rim of the rain-gauge at Holyhead, and two by Dr. J. Glasspoole, on the wet and dry periods of 1937 referred to above, and on rainfall over the British Isles during the period 1901-1930, in which a comparison is effected with the period 1881-1915 still employed as a standard.

L. C. W. B.

Handbuch der Vererbungswissenschaft

Herausgegeben von E. Baur und M. Hartmann. Band 2F: Genmutation. 1: Allgemeiner Teil. Von Hans Stubbe. Pp. iv+429+1 plate. (Berlin: Gebrüder Borntraeger, 1938.) 60 gold marks.

THIS extensive and thoroughgoing account of gene mutations begins with a historical survey of 43 pages which contains many early records of mutations in plants and animals. A full account is given of *Chelidonium majus laciniata*, which appeared in 1590; also accounts, with photographs, of the Ancon sheep, the Manx cat, laciniate-leaved syringa and alder and many others.

The main part of the book is taken up with a record and analysis of the modern work with gene mutations. This includes accounts of polygeny, heterogeny, pleiotropy, dominance, etc.

The section on the quantitative study of mutation phenomena includes the determination of spontaneous mutation rates, the experimental production of mutations by X-rays and other methods, with a detailed analysis of the processes by which X-ray mutations are produced.

The short concluding section on the nature of the gene includes not only a historical background, with the views of Darwin, Naegeli, Weismann and de Vries, but also the most recent ideas of gene structure, by Koltzoff, Demerec, Muller, Wrinch, Timoféeff-Ressovsky and others.

An extensive bibliography is appended and also a large chart classifying all the known types of somatic and gametic mutations. While there are omissions, it will nevertheless be a very useful work of reference.